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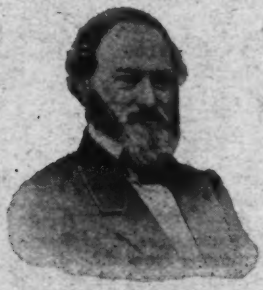

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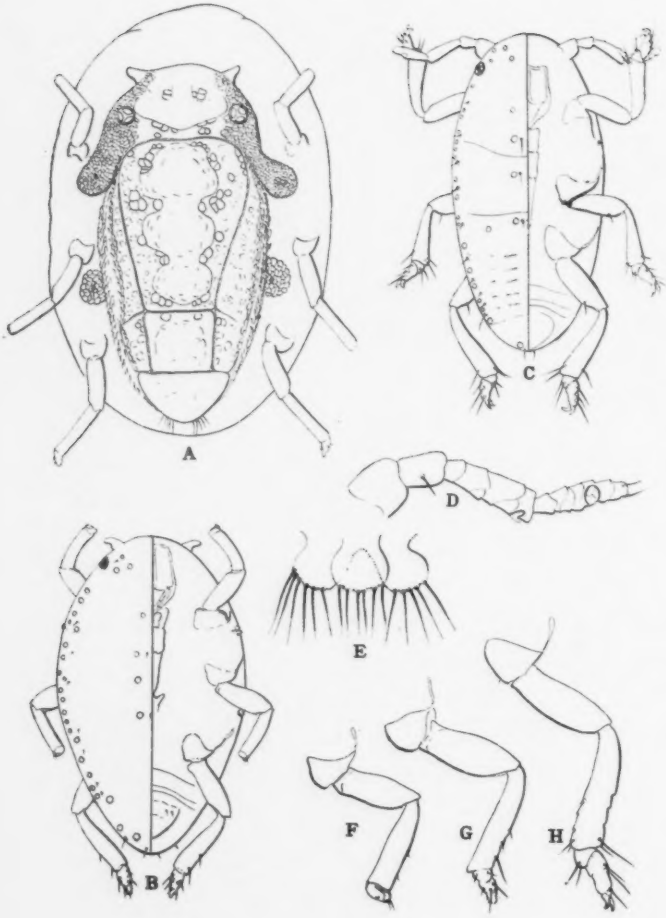

HAMAMELISTES (?) AGRIFOLIAE.—FERRIS.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

THE ACADEMY OF NATURAL SCIENCES, PHILADELPHIA

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A New Species in the Hormaphidinae (Hemiptera, Aphididae).

By G. F. FERRIS, Stanford University, Calif.

(Plate VI)

The subfamily Hormaphidinae of the Aphididae includes among its few species some of the most specialized members of the family. The life histories of such species as *Hamamelistes spinosus* and *Hormaphis hamamelidis* are certainly among the most extraordinary that are known in any of the insect groups. As far as I am aware but three species belonging to this subfamily have been recorded from the United States, and of these one is introduced. It is therefore a decided pleasure to be able to record another American representative of the group. Credit for the discovery of the new species is due to Mr. Donald L. Currier, County Commissioner of Horticulture of San Benito County, California, who forwarded specimens to me for determination in the belief that the insects were Coccidae.

The available specimens represent but a single form, and it is consequently more or less unsafe to express any opinion as

to the generic position of the species. I am inclined to think that it really represents a new genus, but alate specimens will be necessary to determine this definitely, and I am referring it tentatively to *Hamamelistes*. The discovery of the remaining stages may not soon occur, and it seems best to present such information as is available.

Hamamelistes (?) agrifoliae n. sp. Coccidiform generation (Plate VI).

Habit. Occurring on the small twigs and under side of the leaves of the host and presenting the appearance of the first stage larva of some scale insect.

First stage (Fig. C). Length .35 mm. General color pale yellow, the eyes black and the appendages dusky. Margins of the body with a series of small, inconspicuous wax processes and the dorsum with a few similar processes.

Antennae (Fig. D) well developed, four-segmented, the third and fourth segments coarsely imbricated subequal and nearly as long as the first and second segments together. Legs (Fig. H) strongly developed, the tarsi two-segmented, without digitules. Lateral margins of the body with as many as twenty quite large pores and the dorsum with four median pairs of such pores in the thoracic region. Beak three-segmented. Cauda not developed. Cornicles lacking. Abdominal spiracles lacking.

Second stage (Fig. B). Length .42 mm. Color as in first stage. Antennae reduced to mere unsegmented tubercles. Legs (Figs. F, G) relatively and actually smaller than in the preceding stage, the first two pairs with the tarsi reduced to the merest vestiges, the third with the tarsus distinct but one-segmented, the claws lacking on all. Pores arranged as in the preceding stage but those of the marginal series more numerous. Beak three-segmented. Cauda not developed. Cornicles lacking. Abdominal spiracles lacking.

Third stage (Fig. A). Length .6 mm. At maturity quite heavily chitinized and with the venter greatly (and usually irregularly) swollen, the legs appearing as if rising from the dorsum and projecting uselessly above. Secretions lacking or at the most very scanty. Dorsal region composed chiefly of the head and thorax and marked off by very distinct sutures into definite areas. Head and pronotum marked off by a transverse suture which curves behind the anterior spiracles, the lateral areas from each antenna to the corresponding spiracle being strongly and finely reticulate. Mesonotum much elongate, divided by longitudinal sutures into three plates, the median plate being as broad as the other two together. Metanotum divided in similar fashion but scarcely more than one-third as long as the mesonotum. Behind the metanotum is a single undivided plate which conceals the cauda. The head and

thorax are beset with large, more or less symmetrically disposed, pore-like areas and the lateral margins of the meso- and metanota are cast into distinct ridges. Mesothoracic spiracles surrounded by a large, reticulated area. Cauda (Fig. E) distinctly knobbed and anal plate deeply bilobed, both the cauda and the anal plate with several rather long setae. Beak not discernible in the specimens examined. Legs as in the preceding stage. Cornicles lacking. Abdominal spiracles lacking.

Type host and locality. From *Quercus agrifolia* near Chittenden, Santa Cruz County, California, April 28, 1921. Holotype and paratypes and type material in the Stanford University collection.

Notes. The entire absence of cornicles will place this species in Baker's tribe Hormaphidini, which contains but two genera, *Hormaphis* and *Hamamelistes*. The present species agrees none too closely with either of these genera, but is perhaps nearer the latter.

A considerable quantity of material has been examined, but only the three stages described above have been found. Pergande has described three nymphal stages for the corresponding forms of both *Hormaphis hamamelidis* and *Hamamelistes spinosus*. Living examples of all the stages were present. None of the adults appeared to contain young.

EXPLANATION OF PLATE VI.

Hamamelistes (?) *agrifoliae* n. sp.: A, adult; B, second stage; C, first stage; D, antenna of first stage; E, cauda and anal plate of adult; F, G, anterior (or middle) and posterior legs of second stage; H, leg of first stage.

The Mating Habits of Megarhyssa (Hym., Ichneumonidae).

In the October issue of the NEWS, A. B. Champlain reports "the discovery of the curious mating habit of *Megarhyssa atrata*," stating that "very little seems to have been recorded concerning the mating habits of the Ichneumonoids." Attention is called to the fact that the habit described by Champlain was described by Mr. George Gade, in 1884, in Vol. VII, p. 103, of the *Bulletin of the Brooklyn Entomological Society*, for a closely related species, called by him *Pimpla* (*Rhyssa*) *lunator*, as follows: "The males are often observed congregated upon an apparently sound part of a tree; scraping away bark sometimes to a depth of ¼ inch the ♀ was found ready to emerge. Retiring, the males at once returned and one finally succeeded in copulating with the ♀ while yet she was in the cell or burrow. They remain but a short time *in copula* then the ♀ completes her exit from the larval habitation, and flies about, further unmolested by the ♂, in search of a suitable tree upon which to oviposit."—JOHN BARLOW, Rhode Island State College, Kingston, R. I.

Undescribed Crane-Flies from Argentina (Tipulidae, Diptera.)—Part IV.

By CHARLES P. ALEXANDER, Urbana, Illinois.

The species described in the present installment all belong to the tribe Eriopterini, which includes a vast complex of small forms within the Neotropical fauna. The material was collected in the Province of Catamarca by Señor Weiser and sent to me for determination by Dr. Bruch. My sincere thanks are extended to both of these gentlemen for their kind co-operation now and in the past. The types are preserved in the collection of the writer with the exception of that of *Molophilus stylifer* which has been placed in the La Plata Museum together with paratypes of the other species described herewith.

Molophilus catamarcensis sp. n.

General coloration dark brown; antennae of male elongated; wings strongly infuscated; male hypopygium with the apparent pleural appendage a straight chitinized bar that is produced into a beak-like spine on its inner face before the apex, the outer apical margin microscopically serrulate.

♂.—Length about 4-4.5 mm.; wing 5-5.5 mm. Rostrum and palpi dark brown. Antennae of the male elongate, if bent backward extending to beyond the base of the abdomen; antennal segments black, each with a ring of long black verticils. Head dark brown.

Pronotal scutellum yellowish white. Mesonotum dark brown with a brown pollen, the humeral region of the praescutum yellowish white. Pleura dark brown. Halteres light yellow. Legs with the coxae and trochanters testaceous yellow; femora obscure brownish yellow, passing into dark brown; tibiae brown, the tips and the tarsi brownish black. Wings with a strong brownish tinge, the dark brown veins clothed with conspicuous dark hairs.

Abdomen dark brown. Male hypopygium with the apparent pleural appendage appearing as a straight, chitinized bar, before the apex on the inner face, jutting out into a beak-like spine, the outer margin before the tip microscopically serrulate.

Holotype: ♂, Punta de Balasto, Catamarca, altitude 2,300 meters, November 22, 1920 (V. Weiser). *Paratopotype*: ♂.

Molophilus stylifer sp. n.

General coloration brown; lateral margins of praescutum obscure yellow; antennae of male very elongate; wings grayish subhyaline, semiatrophied; male hypopygium with each apparent pleural appendage appearing as a black, stylet-like, straight and slender spine.

♂.—Length about 2.5 mm.; wing 3.5 mm. Rostrum and palpi dark brown. Antennae of the male unusually elongate for a member of this genus; if bent backward extending practically to the end of the body; scapal segments brown; flagellum black, the segments with erect white hairs. Head dark gray.

Mesonotal praescutum brownish medially, the margin broadly obscure yellowish; remainder of the mesonotum brown. Pleura brownish testaceous. Halteres pale, the knobs brown. Legs with the coxae and trochanters pale testaceous; femora and tibiae obscure brownish yellow, the tips broadly dark brown; tarsi dark brown. Wings showing the first evidences of atrophy, narrowed, especially on the basal half; membrane grayish subhyaline, the veins brown with long dark hairs.

Abdomen dark brown, the hypopygium brighter. Male hypopygium with the apparent pleural appendage appearing as a stylet-like black spine, straight and slender, tapering to the acute tips, which are decussate across the genital chamber.

Holotype: ♂, Ampajango, Catamarca, altitude 2,300 meters, December 1, 1920 (V. Weiser).

Rhabdomastix (Sacandaga) basalis sp. n.

General coloration black; halteres yellow; wings blackish, the basal fourth yellowish; *Sc* not extending far beyond the origin of *Rs*; *r* present.

♂.—Length 2.8-3 mm.; wing 3 mm. ♀.—Length 3.2 mm.; wing 3.4 mm. Rostrum and palpi black. Antennae short in both sexes, the scapal segments black; flagellum brownish yellow to yellowish brown; verticils elongate. Head black.

Mesonotum dark brownish black, praescutum dusted with brown, the extreme lateral margins very narrowly and indistinctly yellowish. Halteres yellow. Legs with the coxae dark brown; trochanters obscure yellow; femora dark brown, more yellowish basally; tibiae and metatarsi obscure yellow, tipped with brown; remaining tarsal segments brown. Wings strongly infumed with blackish; about the basal one-fourth conspicuously yellowish, this coloration including practically all of the second anal cell; veins dark brown, yellowish in the basal portion of the wing. Venation: *Sc* rather short, *Sc*1 ending a short distance beyond the origin of *Rs*, *Sc*2 not far from the tip of *Sc*1; *Rs* long; *r* present, inserted on *R*2+3 about half its length beyond the fork of *Rs*; cell *R*2 large, vein *R*2 straight; cell 1*st M*2 closed, or, in rare instances, open by the atrophy of *m*; basal deflection of *Cu*1 immediately beyond the fork of *M*. Anal angle of wing prominent.

Abdomen black, sparsely dusted with a brown pollen. Male hypopygium relatively large and with stout pleural appendages. In the female the antennae are darker; head and thorax more pruinose; mesono-

tum more reddish brown; ovipositor with the elongate valves horn-colored.

Holotype: ♂, Punta de Balasto, Catamarca, altitude 2,300 meters, November 10, 1920 (V. Weiser). *Allotopotype*: ♀, November 11, 1920. *Paratypes*: 1♂, 3♀'s, Santa Maria, Catamarca, October 30, 1920 (V. Weiser); 1♂, 1♀, Rio Diamante, southern Mendoza, January, 1921 (Dr. Carette); 60 ♂ ♀, Bañado, Valle de Santa Maria, Tucuman, April 2-11, 1921 (V. Weiser).

Rhabdomastix basalis is an exquisite little fly that is conspicuously different from all described members of the genus.

Ctenomyia (Leipeneura) adunca sp. n.

Antennal scape yellow; head yellow, the vertex with a large brown area; thoracic pleura striped longitudinally with silvery white and dark brown; wings yellowish gray, stigma inconspicuous; *Sc* short, *Sc2* at tip of *Sc1*; *Rs* short, arcuated at origin; cell 1*st M2* closed; abdominal tergites brown, paler caudally; sternites whitish with a conspicuous brown lateral line; male hypopygium with three pleural appendages, of which only one is chitinized, the apex curved, acute.

♂.—Length about 3.8 mm.; wing 3.6 mm.

Rostrum and palpi dark brown. Antennae with the scapal segments yellow, the flagellum dark brown. Head pale whitish yellow with a large, dark brown area on vertex.

Pronotum yellowish white, narrowly dark brown medially. Mesonotal praescutum dark brown, the humeral region brighter, the lateral margins to the wing-root narrowly but conspicuously whitened; scutum brownish yellow, the center of each lobe and the capillary median line darker brown; scutellum obscure brownish yellow, sparsely pruinose, darker brown medially; postnotum pale, gray pruinose, the posterior margin with two dark brown spots. Pleura dark brown with a broad and conspicuous silvery white stripe from the fore coxa to the base of the abdomen; a narrow brown line extending from the cervical sclerites to the postnotum, passing beneath the base of the halteres; posterior dorsal pleurites pale, anterior dorsal pleurites infuscated. Median area of mesosternum pale. Halteres pale yellow, the knobs dark brown. Legs with the coxae pale white or testaceous; trochanters yellow; femora light brown, the tips indistinctly darkened; tibiae brown, the tips narrowly darkened; tarsi brown. Wings with a faint yellowish gray tinge; stigma slightly darker, but still very pale; cord and outer end of cell 1*st M2* indistinctly seamed with darker; veins brown. Venation: *Sc1* short, ending far before the origin of *Rs*, *Sc2* at the extreme tip of *Sc1*; *Rs* short, only a little longer than the deflection of *R4+5*, strongly arcu-

ated; cell 1*st M2* closed; basal deflection of *Cu*1 about one-third its length before the fork of *M*.

Abdominal tergites brown, the caudal margins of the segments pale; sternites whitish with a conspicuous brown lateral line. Male hypopygium with three pleural appendages, the longest and most conspicuous appearing as a relatively short, blackened blade that terminates in an acute, slightly curved, blackened point; the second appendage is pale, about one-half the length of the first, the blunt tip narrowed; the third appendage is very squat in appearance, broader than long, with about a dozen setae on the surface, excluding two longer and more powerful bristles at the proximo-caudal angle. Penis-guard broad, fleshy, pale.

Holotype: ♂, Ampajango, Catamarca, altitude 2,300 meters, November 30, 1920 (V. Weiser). *Paratype*: ♂, Punta de Balasto, Catamarca, November 11, 1920 (V. Weiser).

Notes and New Species (Lep., Arctiidae).

By WM. BARNES, M.D., and A. W. LINDSEY, PH.D.,
Decatur, Illinois.

SUBFAMILY NOLINAE.

Roeselia varia n. sp.

General color dark gray to brownish gray, with a variable hoary irroration due to the white tips of some scales. Thorax and head more definitely whitish. Collar with two transverse whitish lines, variably distinct. Palpi dark outside, pale within, exceeding front by about length of head. Under surface and abdomen silky pale gray. Legs similar inside, irrorate with gray outside. Tarsi darker with each joint pale tipped.

Basal area of primaries grayish, darker toward costa, with an inconspicuous tuft of raised scales in the cell. T. a. line single, dark, strongly out-curved over cubital stem and becoming straighter toward inner margin, sometimes slightly irregular. T. p. line geminate, outer line dark gray or blackish, sharply but not deeply dentate on veins, strongly outcurved from costa to vein Cu2, thence with a large outward angle on vein A; inner line rather remote from outer, even, paler and less sharp, following course of outer, sometimes very faint, and sometimes a little heavier on the veins. Median shade indicated by two costal dots, whence a brownish gray shade extends inward, including two scale tufts in cell, filling the median space behind the cell and becoming paler toward the inner margin. This shade is sometimes conspicuous and sometimes rather faint. S. T. space similar to basal with a pale, irregular, vaguely defined s. t. line about midway between t. p. and outer margin and following roughly the course of the t. p. veins here some-

times darker than ground color. Outer margin with a fine dark line and minute dashes on the veins. Fringes concolorous with a pale basal line. Secondaries pale powdery brownish gray, darkest at outer margin; fringes slightly paler.

Under surface: primaries pale gray, shining, powdered with dark tipped scales on costal and apical areas. Secondaries much paler, similarly powdered on costal area. Wing expanse 26 to 32 mm.

Holotype ♂, Sept., and *allotype*, Palmerlee, Arizona. One paratype ♂ and two paratypes ♀, same locality. One paratype ♂ and one paratype ♀, Chiricahua Mts., Cochise County, Arizona, Sept. and Aug., all in coll. Barnes, with other specimens from the same localities.

We place *fuscula* Grt. between *minor* Dyar and *dentata* Dyar. *Varia* is related to the last named and to *conspicua* Dyar, which is a good species, and may be placed between the two. From the former it differs in the more even and more constantly geminate t. p. line and from the latter in its relatively short palpi. In *conspicua* the palpi exceed the front by well over the length of the head.

Subfamily Lithosiinae.

A recent examination of the type of *Ctenucha modulata* Hy. Edw. by Dr. Barnes disclosed the fact that our series under this name was incorrectly placed. The four specimens which we regarded as *modulata* appear to belong to an undescribed species. In Hampson's key to the genera of this subfamily (Cat. Lep. Phal. B. M. II, 81 *et seq.*) the insect runs to the genus *Lyscoia* Wlk. or the second section of *Pasteosia* Hamps., but we feel that this entirely misrepresents its relations. From *Gnamptonychia* Hamps. it differs only in the apparent anastomosis of *Sc* and *R*1 of the primaries toward the greatly weakened apex of *Sc*, and in the stalking of *M*2 and *M*3 of the primaries. The species appears to be closely related to *flavicollis* Druce, orthotype of *Gnamptonychia*, so we associate it for the present with that species. According to our idea of genera, some phylogenetic differences may be present within the unit, as well as within the family. Nature is relative; certainly Man cannot make her absolute.

Gnamptonychia ventralis n. sp.

Head, first joint of antennae, palpi, collar, coxae, femora, hind tibiae and ventral surface of abdomen and thorax bright orange-yellow. Claspers of male and terminal part of body in female also orange-yellow. All femora tipped with black, hind tibiae with black spurs and tip. Fore and mid tibiae and all tarsi black.

Primaries greenish drab in our one female, greenish black in males. Secondaries dull brownish black. Thorax and abdomen above concolorous with primaries and secondaries, respectively. Wing expanse 38 to 45 mm.

Holotype ♂ and two paratypes ♀, White Mts., Arizona. *Allotype* Huachuca Mts., Arizona, July 14. All in coll. Barnes. All four types are in rather poor condition.

Cisthene Walker. Logotype **C. subjecta** Wlk.

The earliest valid type fixation for this genus which we are able to find is that of Grote (Bull. Buff. Soc. Nat. Sci. II, 151, 1874). This was corroborated by Kirby in his Cat. Lep. Het. I, 288, 1892. The name thus replaces *Illice* Walker as used at present.

Cisthene faustinula Bdv.

The type of this species has recently been illustrated in Oberthür's *Études*. We have two Colorado specimens which compare very well with this figure, but find that most of our Californian examples are referable to the form *fusca* Stretch. It would be interesting to hear from some of the Californian students what conditions may govern the appearance of the two forms.

SUBFAMILY ARCTIINAE.

Arachnis midas n. sp.

A single male *Arachnis* taken by Mr. Tom Spalding at Eureka, Utah, August 24, 1920, proves to be an undescribed species.

This specimen is distinguished at once from most of our species by its yellow secondaries, and from *zuni* Neum. by the more broken, macular appearance of the dark markings of the primaries. These wings are pure white, the markings almost identical with some specimens of *A. picta maia* Ottol. The secondaries are yellow of a more ochreous shade than the secondaries of *zuni*, and the area between *M*1 and *A*1 is semi-transparent yellow, not white as in *zuni* ♂. Only the fringes are whitish. There are three black dots on the outer margin,

one, geminate, at *R*, a very small one at *M3*, and one toward anal angle. There are three large gray costal spots, bordered with black, which reach to the radius. The middle one is continued slenderly across the end of the cell, and the basal spot forms a vague, broken band to *A*1. The under surface of the primaries is also similar to *A. picta maia*, but the yellow of the costa becomes paler toward the inner margin, which is pale yellow instead of pink. The secondaries are white, somewhat tinged with yellow, and are broadly ochreous along the inner margin. Maculation as above but more definite.

The abdomen is concolorous with the secondaries. It is marked with macular black lateral lines and a slender dorsal line broadened on the last segment. The entire body is white below. Expanse 66 mm.

Holotype ♂ in coll. Barnes.

Pygarctia elegans Stretch.

We have a specimen from Kingman, Arizona, which agrees so accurately with Stretch's description as to leave no reasonable doubt of its identity. This specimen convinces us that the present placing of *roscicapitis* N. & D. and *flavidorsalis* B. & McD. as forms of *elegans* is incorrect. The distinguishing features of *elegans*, as exemplified by this one male, are the pinker shade of the abdomen, the presence here of lateral black spots and the fact that the dorsal spots are distinctly bordered with white, the restriction of the pinkish area on the head to a very slender line, broadened behind the eyes, and the white shaft of the antennae. *Flavidorsalis* may stand as a form of *roscicapitis*.

News of Another Russian Entomologist

[Apropos of the article in the NEWS for July, 1921, page 199, we are glad to print the following from a private letter.—ED.]

My friend and compatriot, the Russian Odonatologist, Prof. A. N. Bartenev, asked me to help him get all the literature on Odonata published since 1914, as he is, of course, severely handicapped in his work by the lack of literature of recent years. These may be sent either directly to Prof. Bartenev, his address being Prof. A. N. Bartenev, University, Rostov-Don, Russia, or, if there is any difficulty in sending *registered* book packets (it is not safe to send non-registered to Russia) from America, they may be sent to me and I will forward them to him —B. UVAROV, Assistant Entomologist, British Museum (Natural History), Cromwell Road, London, S. W. 7.

Description of Two New Species of the Angustipennis Group of the Dipterous Genus Tipula Linnaeus, with Table of Species.

By Wm. G. Dietz, M.D., Hazleton, Pennsylvania.

The species of this group are characterized by pale gray to brownish, or reddish-brown wings, mottled, with predominantly pale spots and a few dark, fuscous spots. The latter are confined to the origin of *Rs* (absent in *beaulieui*), end of *Sc* and the stigma and its proximity. A pale spot always present at two-thirds or three-fourths of cell *M*, another spot, generally large but often absent, just before the middle of cells *Cu* and *A*1; this spot frequently extends into cell *M*. Pale spots before and behind the stigma, generally present and conspicuous, the latter frequently extends as a fascia into cell 1*st M*2, or even *M*4. No fuscous spots at base of cells *R* or *M* and no pale spots along the posterior wing-margin.

Key to the species.

1. Eighth sternite of male, with one or more appendages..... 2
   Eighth sternite of male simple..... 4
2. With median and lateral appendages..... 3
   With median appendage only.....*serta* Loew
3. Yellow; ninth tergite of male short, scarcely emarginate in the middle .....*senega* Alex.
   Darker, yellowish-gray. Ninth tergite of male longer, with a deep, broadly V-shaped emargination.....*neptun* sp. n.
4. Antennae unicolorous, fuscous..... 5
   Not as in the alternative..... 8
5. Abdomen reddish 6
   Abdomen not reddish 7
6. Abdomen without longitudinal stripes, wings reddish-brown, *shasta* Alex.
   Abdomen trivittate, wings grayish-fuscous.....*angustipennis* Loew
7. Thoracic stripes margined.....*tristis* Doane
   Thoracic stripes not margined.....*marina* Doane
8. Flagellar joints unicolorous..... 9
   Flagellar joints, except the first, distinctly bicolored.....15
9. Dark, blackish, thoracic stripes not margined; antennae dark brown, second joint yellowish.....*nigrocorporis* Doane
   Not as in the alternative.....10

10. Black; abdomen not vittate.....*helvocincta* Doane
Not as in the alternative.....11
11. Thoracic stripes not margined.....*subtenuicornis* Doane
Thoracic stripes margined.....12
12. The median thoracic stripe divided by a longitudinal line.....13
Not as in the alternative.....*ignota* Alex.
13. Cell *R*4+5 white in its basal portion.....*centralis* Loew
Not as in the alternative.....14
14. Ninth tergite of male with deep, U-shaped emargination, *carolina* Alex.
Ninth tergite short and broad, posterior margin broadly concave .....*canadensis* Loew
15. Flagellar joints yellow, basal enlargement dark fuscous, *balioptera* Loew
Flagellar joints fuscous, basal enlargement yellow..*beaulieui* sp. n.

Tipula neptun spec. n.

General coloration yellowish-gray; allied to *senega* Alex., *pallida* Loew.—Wings gray, pale, markings distinct. Ninth tergite of male with deep, broad V-shaped emargination. Eighth sternite with median and lateral appendages.

♂—Length, 16 mm.; wing, 15 mm. Head dusky, yellowish-gray. Rostrum of moderate length, concolorous; frontal prolongation with ill-defined median darker line; nasus depressed. Palpi brown, fourth joint shorter than the preceding joints together. Antennae of moderate thickness; extended they reach to about the end of the scutel; scapal joints dull yellow, first flagellar joint light brown, the following joints fuscous, the basal enlargement dark fuscous, distinctly emarginate beneath; setae not or but little longer than the respective joints; pubescence very short, white.

Thoracic dorsum gray; stripes brown, the median prescutal stripe divided by a fusiform line of the ground color, the exterior margin of the stripe with a row of whitish hairs. Scutum gray with a dark, fuscous patch each side. Scutel yellowish-fuscous, with a slight sheen. Postnotum gray, with fuscous median stripe, wider anteriorly. Pleurodorsal membrane dark yellow. Pleura gray, grayish white pruinose. Halteres pale, club fuscous. Legs yellowish-fuscous. Pilosity very short, black, appressed. Coxae grayish-yellow; femora sordid yellow basally, darker toward the apex; tibiae light fuscous; tarsi dark fuscous, the metatarsi much shorter than the tibiae. Wings gray, darker in apical portion, the pale markings distinct, spots in 1*st r* and 2*nd r*, *r*2 and *r*3, *r*4+5, basal part of cell 1*st M*2, base of cell *M*4, a large spot at three-fourths of cell *M* and a large spot at one half of cell *Cu* and *A*1; this spot extends indistinctly into cell *M*.

Abdomen yellow, light brown posteriorly, a fuscous dorsal stripe

interrupted at the incisures, a lateral stripe also interrupted at the incisures and becoming obsolete on tergites seven and eight; lateral margins of tergites whitish. Venter obscure yellow, brownish posteriorly. Hypopygium not large, light brown. The eighth sternite slightly emarginate, with a rather long, median appendage, bifid at the apex and a rather long, digitiform appendage at each lateral angle, bearing a hair pencil at its apex. Ninth tergite broad, with a deep, broad V-shaped emargination, each lateral lobe with a sharp point at its apex; ninth sternite with deep V-shaped emargination, containing two pale, hairy appendages. Pleural suture complete; the pleurite somewhat prolonged distad, subacuminate. The upper external appendage long, slender, directed dorsad and bearing a pencil of hair at its apex; the inner appendage consists of a perpendicular plate, the anterior end of which abuts beneath the emargination of the ninth tergite, posteriorly this plate expands into a horizontal lamina, broadly emarginate along the posterior margin, the distal end of the perpendicular plate turns outwardly.

♀—Length, 20.5 mm.; wing, 17.5 mm. Antennae short, scapal joints brownish yellow. The dorsal, abdominal stripe more widely interrupted beyond the second incisure, the lateral stripes broader and more conspicuous, the lateral tergal margin more yellowish. Ovipositor brown, valves rather long, gradually narrowed posteriorly, obtusely pointed, the ventral pair fully three-fourths the length of the dorsal valves.

Holotype—♂, Bullion Peak, Park County, Colorado, 11,000 feet, May 20, 1914. (E. J. Oslar.) *Allotype*, ♀, topotypic, 11,500 feet, August 20, 1914. *Paratypes*, topotypic, 9 males, 3 females. Types in author's collection.

Agrees with *T. senega* in the construction of the eighth sternite of the male, but differs from this species in the gray thorax and the longer and deeply emarginate ninth tergite of the male. In its hypopygeal construction this species shows considerable similarity to *impudica* and its allies, the ninth sternite, however, is much less prolonged.

Tipula beaulieui spec. n.

Thoracic stripes margined. Eighth sternite of male abdomen simple, acutely produced in the middle. Flagellar joints distinctly bicolored, brown, basal enlargement yellow.

♂—Length, 15 mm.; wing, 14 mm Head gray; rostrum rather short, sordid yellow; frontal prolongation gray, nasus short, obtuse. Palpi light brown, fourth joint fuscous, shorter than the three preceding joints together. Antennae not elongate; scapal joints dull yellow; first flagellar joint yellow, infuscate apically, following joints fuscous,

basal enlargement dark yellow, cylindroidal, scarcely emarginate above the basal enlargement; setae shorter than the respective joints; pubescence very fine, white. Occiput grayish-fuscous, with an indistinct, darker, median line, orbital margins pale.

Thoracic dorsum brownish-yellow. Pronotum with dark fuscous, median line. Prescutal stripes brown, distinctly margined, especially the lateral ones, the median stripe divided by a narrow line of the ground color, which is a little wider behind the middle; fuscous spots of scutum margined. Scutel and postnotum gray, the former with a fine, fuscous, median line, the latter with broad, lateral, fuscous stripes and an abbreviated median line. Pleuro-dorsal membrane sordid yellow. Pleura gray, mesosternum and mesepimeron darker. Halteres pale yellow, club infuscate. Legs sordid yellow, pilosity black, very short. Coxae yellowish-gray, whitish pruinose; femora and tibiae darker at the apex; tarsi fuscous, outer joints darker; metatarsi shorter than the tibiae. Wings gray, more yellowish in basal part and along cell *Sc*, darker in apical portion; no fuscous spot over origin of *Rs*, stigma brown; the broad post-stigmal spot extends through cell *R*2+3, narrows in cell *R*4+5 and ends very conspicuously in cell 1*st M*2; the outer spot in cell *M* large and conspicuous; a rather broad streak in cell *A*1 close to vein *A*1, no pale spot in cell *Cu*.

Abdomen orange yellow, first tergite grayish-yellow; three longitudinal, fuscous stripes, the dorsal stripe conspicuous, entire, extends from base to end of seventh tergite; lateral stripes ill defined, and consisting of irregular patches on the segments; lateral margin of tergites whitish. Eighth sternite simple, acutely produced in the middle. Hypopygium yellowish-gray, rather small; ninth tergite moderately large, channeled along the middle, the posterior margin with V-shaped emargination; ninth sternite with V-shaped emargination. Pleural suture complete; pleurite truncate posteriorly, hind angle acuminate; outer apical appendage small, lanceolate, curved dorsocephalad; the inner appendage large, perpendicular, bladelike; the lower appendage consists of a horizontal lamina, ending posteriorly in an upturned, curved club, emarginate at its tip and turned outward.

Holotype— ♂, Ottawa, Canada, January 9, 1912. (Germain Beaulieu.) In author's collection.

Named in honor of Mr. Germain Beaulieu, to whom I am indebted for many favors.

Readily distinguished from all the other known members of the group, in the distinctly bicolored flagellar segments, brown with yellow, basal enlargement. In hypopygeal construction this species greatly resembles *T. angustipennis*.

Observations on Certain Siphonaptera.*

Ctenocephalus canis Curtis; Ctenocephalus felis Bouche and Ceratophyllus fasciatus Bosc.

By E. M. CRAIGHEAD, Bureau of Plant Industry, Harrisburg, Penna.

In January, 1917, experiments were started for the purpose of confirming the theory that the flea may be a possible carrier of Infantile Paralysis, as outlined by Dr. Mark W. Richardson (1 and 2).

Daily visits were made to an animal hospital and hundreds of flea eggs were collected from mats where the dogs and cats were confined. After several days' examination the author's attention was called to the fact that not a single living larva could be found; though many of the eggs had hatched. The larvae died shortly after they emerged from the eggs. The temperature of the room was 70 degrees F. or more, without any moisture, for doors and windows were always closed. This very condition pointed out the fact that proper moisture must be present for the survival of the larvae, and as a result much time was saved in the laboratory experiments. This same room, during the months of June and July, was without heat; windows and doors were open constantly and many larvae completed their life history under these conditions. The former conditions exist in many of our homes during the winter, thus there is a decided decrease in the number of fleas.

Eggs when laid upon a blanket were very easily removed, but when laid in a test tube or any earthen ware they adhere to the container and require great care in removal. They were placed in a small petri dish, the bottom of which was covered with blotting paper, and each day was slightly moistened with water. The blotter retained sufficient moisture for the cage and enabled the larvae to free themselves from the egg shells.

Temperature and moisture have some effect on the time of hatching of the eggs and the following table shows results

* The observations and records that appear in this article are the results of Research Work carried on at Harvard Medical School, and the Massachusetts General Hospital, Boston, Massachusetts, during the years 1917 and 1919.

obtained without moisture and regulated temperature other than that present in the laboratory and eggs were unprotected from direct light.

Cage	Number	Number eggs in cage	Number hatched
Jan.	18—1	6	6
"	22—3A	131	90
"	23—3B	100	55
"	24—3C	60	26
"	25—3D	100	54
"	26—3E	100	69
"	29—3F	100	11
"	29—3G	100	67
"	30—3H	100	52
"	30 3I	100	20

The following table shows rate of hatch when blotting paper and moisture were used; temperature kept at 70 degrees F., and eggs protected from direct light.

Cage	Number	Number eggs in cage	Number hatched
Feb.	2—5A	65	37
"	2—3L	100	79
"	6—3M	100	89
"	7—3N	100	85
"	7—3O	100	65
"	9—3P	100	92
"	9—3R	100	80
"	14—6	25	16
"	17—6A	200	171
"	22—6B	200	175
"	23—6C	100	72

The removing of the larvae from egg cages to larval cages was done by means of a moistened camel's hair brush, and a slight tap on the edge of the cage would set larvae free.

Cages for Larvae.

Petri dishes fitted with circular pieces of blotting paper, extending ⅛ to ¼ of an inch up the sides, proved to be very satisfactory. If blotting paper did not extend up the side of the cage, the larvae would work their way under it, and if not removed every day they would die.

Sand and sawdust were placed in the cage so that they reached half way up the side, and then the cage was removed

out of the direct light. If too much water was placed in the cage, the sand, sawdust and blotting paper would all help to absorb it, and the next day the cage would not be moistened.

The cage used for pupae was the same used by Mr. Lyon, (No. 3) in his experiments with the cat flea, namely: A glass funnel with wire pan within; the cage containing pupae was placed on the pan, leaving a clear space around the sides, and the funnel was covered to prevent hatched fleas from escaping. The neck of the funnel was inserted in a test tube and the entire apparatus attached to a ring stand. The fleas when emerging would jump about and fall into the test tube below, where they could very easily be removed.

Preparation of Food.

Blood was secured in large quantities, centrifuged, and after the serum was removed, the red corpuscles were placed in an incubator and allowed to dry. The crystals were placed in a mortar and ground to a fine powder, and this formed the food for most of the larvae. Rat feces were ground by the same process and gave fairly good results, but far better results were secured from the dry blood. Only one objection could be found when dry blood was used, and this could easily be overcome if one took care in distributing the food throughout the cage, namely: When too much moisture was present in the cage and the blood was not evenly distributed, the moisture would turn the dried particles into a drop of blood, and upon drying again would hold the larvae prisoners, thereby killing many. Two conditions were found unfavorable when rat feces were used: One, when too much moisture was present mould would start to grow and soon the cage would be in an unhealthy condition for larvae; second, when feces became too damp a certain amount of ammonia was given off, and this would kill the larvae if the top of cage was not removed. Cages could not be left uncovered, for in the dark larvae become quite active and could easily escape, due to the shallowness of the petri dishes. Mutton cloth saturated with blood was also tried but gave very poor results, so this and rat feces were abandoned shortly after the original experiments. When

dry blood instead of other foods was fed to larvae the life cycle was considerably shortened.

While collecting eggs from the mats of dogs and cats on several occasions, adult flea feces were observed in rather large amounts, and as these are the source of food for most of the larvae in nature, enough material was gathered to conduct an experiment. The larvae, in cages, fed entirely upon this, produced adults in 15 and 16 days respectively. No such results were obtained when they were fed upon other food. The blood used in other experiments was from a human source, and the larvae seem to obtain certain ingredients from the flea feces that were not present in the human blood, for the life cycle in the former case was considerably shorter.

Life History—22 Days.

A very close record was kept of 5,997 eggs from the time they were laid until adults emerged, and the following shows the results:

Number of eggs: 5997. Average number of days to hatch: 4. Per cent hatched: 75. Average number of days from egg hatching to pupa: 14. Average number of days for pupa: 4.

If adults were fed daily they could be kept alive for a period of thirty to forty days.

Fleas on Rats.

Twenty-five rats were captured alive in several open lots in Boston and not a single rat flea was secured. In Wayland, Massachusetts, twelve rats were caught and from these 57 adult rat fleas were removed. In Brighton, Massachusetts, a total of over 100 rats was captured and from these six rat fleas were removed. The large number of rats in Brighton and the scarcity of fleas led to further investigations. The boards were removed from one of the stable floors and under here many rat nests were found, and in every nest eggs, larvae and adult fleas were present in large numbers. As high as 60 adults were removed from one nest and there was not one nest that did not give a small number of adults, many of which contained fresh mammalian blood. Why the fleas did not remain upon the rats can be partially explained by the

poor physical condition of the latter. Many had no hair on their backs; a few had, but it was not sufficient to afford a hiding place.

This certainly proves that these fleas at one time fed upon their natural host and then went into hiding as soon as they had secured sufficient food. Rats slept in large numbers in the nests under the floor of the stable, so the fleas could undoubtedly obtain food whenever they desired it. In such places the rats gather for winter quarters, and in just such a place as this the life cycle of fleas continues throughout the year. If the beds of household animals are kept dry and cleaned every few days there is little chance of the larvae ever reaching the adult stage. In a wet season, if animals are out of doors, we have another proposition to deal with, for there is plenty of moisture present for the larvae to complete the life cycle.

The Feeding of Adults.

Fleas were removed from the breeding cage, placed in a test tube, and over the end of a tube a fine grade of silk bolting cloth was fastened by an elastic band. A portion of the abdomen of a host animal was shaved and the tube was then placed upon this region. This method proved very satisfactory, for from twenty to twenty-five fleas were placed in each tube and from two to three tubes could be held in the hand at one time. The fleas were fed once or twice every day. It never required more than five minutes for them to feed.

After feeding the test tube was placed with the silk-covered end down upon a piece of moistened blotting paper, that was cut to fit a small bell jar, the bottom of which contained moistened sand and sawdust.

Feeding Fleas on Unnatural Hosts.

When fleas were removed from their natural host and placed upon a monkey, rabbit, or guinea pig, there was very little likelihood of their feeding, and nine-tenths of them would die in about five days, while on the other hand reared specimens when placed upon an unnatural host would feed in a very short time and could be kept alive from thirty to forty days. It seemed that after they once fed in the tubes little trouble was found

in transferring them to other animals, and even to human beings. When the tube is first placed upon the animal the fleas are quite excited, but they gradually settle down, and if not disturbed, will take a full meal at one feeding. Adults have been kept alive for fifty days, but this is quite unusual and undoubtedly they live longer under natural conditions.

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3. Lyon, H. Notes on the Cat Flea—1915. Psyche, XXII, pp. 124-132. No. 4, Aug., 1915.

On the Species of the Genus Basileus Sauss. and Pict. (Orth., Copiphorinae).

By B. P. UVAROV.

(With one figure in Text.)

The genus *Basileus* (Orthoptera, Copiphorinae) was established in 1899 by Saussure and Pictet, with one species only—*B. diadematus* Sauss. & Pict. W. Kirby, in the course of compiling his catalogue, rightly included in the same genus *Locusta repanda* Walker, but he was quite wrong in regarding *repanda* as identical specifically with *diadematus*, since Walker's species differs very much even from the description of *diadematus*. He, nevertheless, synonymized *diadematus* with *repanda*, the latter name being adopted by him according to its priority. This synonymy has been accepted also by H. Karny in his latest revision of *Copiphorinae*.

As I had the opportunity of studying Walker's actual type of *repanda*, as well as another female specimen of the same species, and compared them with one female undoubtedly belonging to *diadematus*, I feel myself justified in giving the following key for separating these two, and the only known species of *Basileus*.

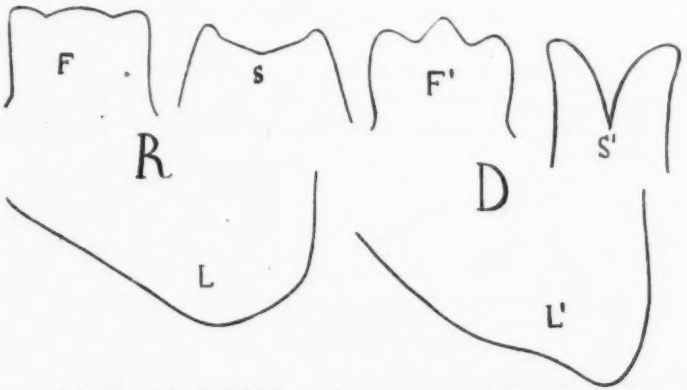
1 (2). Fastigium of the vertex with all three lobes rounded, the middle one being considerably broader than the side ones, but not prominent. Face, clypeus and mandibles rufous. Hind lobe of pronotum broad and short; lateral lobes with hind angles widely rounded.

Subgenital plate of female short, flat; its apex with a broad triangular emargination; hind lobes very short. Ovipositor moderately curved, about twice as long as pronotum.....*B. repandus* (Walk.)

2 (1). Fastigium of the vertex with middle lobe subacute, distinctly prominent and scarcely broader than the side lobes. Lower part of the face, clypeus and mandibles black. Hind lobe of pronotum narrower and longer; lateral lobes with hind angles subacuminate. Female subgenital plate elongate, tectiform, deeply and narrowly triangularly emarginate at the apex, with hind lobes rather long and slightly impressed. Ovipositor strongly recurved, one and one-half times as long as pronotum.....*B. diadematus* Sauss. & Pict.

The dimensions of both species are as follows:

	repandus	*diadematus*
Length of body	36 mm.	30 mm.
Length of pronotum	10	9.5
Width of the hind lobe of pronotum....	7.5	6.5
Length of tegmen	57	49
Length of hind femur	17	16
Length of hind tibia	16	15
Length of ovipositor	19	15



R.—*Basileus repandus* (Walk.) D.—*B. diadematus* Sauss. & Pict. F, F1, fastigium of vertex from above. S. S1, subgenital plate of female. L, L1, lateral lobes of pronotum.

The geographical distribution of both species is, so far, very poorly known. *B. diadematus* was originally described from Cayenne and the only specimen before me was taken by A. A. Abraham at Takama, on the Berbice River, British Guiana, in February, 1919. I do not know of any other records of this species. As for *B. repandus,* its type is from an unknown

locality, but another specimen in the British Museum is from Pernambuco. There are, of course, no other records on the occurrence of this species, since it was confounded by Kirby with *diadematus*. The synonymy of both species is as follows:

1899. *Basileus diadematus*. Sauss. & Pict., Biol. Centr. Americana, Orth., I, p. 385, No. 1, pl. 19, fig. 11, 12.
Basileus repandus (Walk.).
1869. *Locusta repanda*, Walker, Cat. Derm. Salt. Brit. Mus., II, p. 284, No. 16.
1910. *B[asileus] repandus*, Kirby, Syn. Cat. Orth., II, p. 233, No. 1 (*except synonyms!*)
1912. *B[asileus] repandus*, Karny, Gen. Insect., Orth., 139 fasc., Copiphorinae, p. 29, No. 1 (*except synonyms!*)

A New Species and A New Variety of Cicindela (Col.).

By Adolph Mares, Chicago, Illinois.

Two apparently undescribed forms belonging to the genus *Cicindela* have been in my collection for a number of years. Having been urged by many of those who have viewed them, to make them known, I have decided to yield to their wishes. The following descriptions, though brief, will, it is believed, suffice to enable their recognition.

Cicindela illinoensis sp. nov.

This form is similar in size and markings to *sexguttata* Fab., from which it differs by being entirely black and the upper surface opaque. The sides of the prothorax at basal third are more strongly compressed and parallel to base.

I took this *type* myself at Riverside, Illinois, and it is a unique in my collection. I had regarded this as a variety of *sexguttata*, but the differently formed thorax in combination with other characters leave no doubt as to its distinctness from that species, black forms of which are said to occur in the eastern states, New Jersey and Pennsylvania, mixed with the green as dimorphic forms. This is a male of the species—length 14 mm., width 6 mm.

Cicindela repanda var. **hoosieri** nov.

Differs from the typical form by the general color being a rather brilliant green instead of the usual dark brown. The elytral markings which are of the *repanda* type and complete are also broader than in typical *repanda*.

Type from Cedar Lake, Lake County, Indiana, taken by myself. This is a female of the species—length 12 mm., width 5 mm.

This form seems certainly deserving of a varietal name, if only for the purpose of expediting exchanges.

Some Notes on Drosophilidae (Diptera).

By J. R. MALLOCH.

Several years ago while working on the immature stages of Diptera I undertook to arrange and extend the materials in the family Drosophilidae belonging to the collection of the State Natural History Survey of Illinois, and part of that work consisted of making keys to the genera. Shortly after I started the work I was informed of the more extensive work which Dr. Sturtevant had undertaken and dropped mine, at least insofar as it was intended for publication. Recently I received from Dr. Sturtevant a copy of his paper on Drosophilidae* and present the following notes on some of the genera as an addition to our knowledge of the family.

STEGANA Meigen.

Sturtevant has united this genus with *Phortica* Schiner in his paper. Though the characters usually cited for their separation are, as he says, unreliable, there are other characters present that, in my opinion, warrant the retention of *Phortica* as a separate genus.

In *Stegana* the frontal lunule is transverse above, the suture extending in a straight line almost from eye to eye above bases of antennae, while in at least the American species of *Phortica* it is arcuate above and indistinct except centrally; the mid tibia has some very noticeable setulae on posterodorsal surface which are not developed in *Phortica;* the scutellum is slightly flattened above, not regularly rounded, and elongate, while in *Phortica* it is convex, short and evenly rounded; and the second wing-vein is curved forward rather abruptly to costa at its apex, whereas in *Phortica* it is straight to apex, gradually approaching costa.

I took a single female of the genotype, *coleoptrata* Scopoli, on a tree-trunk at Urbana, Illinois, July 23, 1920.

PHORTICA Schiner.

Sturtevant unites Loew's two species in his paper, stating that an extensive series "shows graded color variations completely connecting these two extremes," and that he can find no

*Publication 301, Carnegie Institution, Washington, 1921.

other characters upon which to separate them. In my material, which is all from Illinois and all collected by myself since 1915, I find three species, two of which I assume to be those described by Loew. Several of the specimens taken were attracted evidently by perspiration and were very persistent in their efforts to settle on my hands and face.

Key to Species.

1. Male with some very long yellow bristles on basal half of postero-ventral surface of hind femur, the longest of which are longer than the diameter of femur; color of both sexes usually deep black; humeral and pleural spots milk-white and conspicuous; bristles of thorax yellowish, in male conspicuously so; frons in male usually slightly silvery and more or less whitish anteriorly..*humeralis* Loew
Male without bristles as above; species brownish or yellowish, with or without conspicuous white humeral and pleural spots; frons not silvery 2
2. Face, humeri, and pleurae with milk-white spots....*leucostoma* Loew
Face, humeri, and pleurae without milk-white spots, but little paler than the surrounding areas .....*minor* sp. n.

Phortica minor sp. n.

♂, Yellowish brown, slightly shining, legs slightly paler. Humeri and the pleural area occupied by the white spot in other species paler than the surrounding areas but inconspicuously so.

Structurally similar to *leucostoma*, differing in being 2 mm. in length, whereas *leucostoma* is 3 mm.

Type, Dubois, Illinois, June 5, 1920. Two paratypes, same locality, August 12, 1920, and June 3, 1919. Types in the collection of the State Natural History Survey, Urbana, Illinois.

MICRODROSOPHILA gen. n.

Generic characters: Similar to *Drosophila* in structure. Differs from that genus in having each orbit with two strong bristles, the outer one directed forward and placed a little anterior to the inner, which is backwardly directed; the mesonotum with two pairs of dorso-centrals, one pair a little proximad of the middle and the other near posterior margin; only one humeral bristle; basal pair of scutellars much weaker than apical pair, the latter not cruciate; costal setulae continued almost or quite to apex of third vein.

Genotype, Drosophila quadrata Sturtevant.

Sturtevant records this species from Alabama, Georgia, and Indiana. I took two specimens on windows in the Natural History Building of the University of Illinois, June 13 and August 4, 1915.

ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., DECEMBER, 1921.

The Insects in the United States National Museum

The discussion in this and preceding numbers of the NEWS on the deposition of types of insects adds interest to the data given on the Insects of the National Museum in the lately published *Annual Report of the Smithsonian Institution for* 1919. In it Prof. J. M. Aldrich, Associate Curator, traces the origin of the insect collection to Dr. C. V. Riley in 1878, and briefly follows its growth from 115,000 specimens in 1886, to 2,125,189 (partly estimated) in June, 1919. The named species represented by this latter figure number 98,925, also estimated in part. One of the most recent statements as to the total number of known species of insects is that of Prof. H. S. Pratt, in 1912, who gave the figures 360,000. On this basis the National Museum possesses more than one-fourth of this number and claims to have types of about one-sixteenth, or 22,969 species.

Although it is generally assumed that the Coleoptera are the most extensively studied of the insectan orders, and although the National Museum estimates its beetles at 738,000, its named species thereof are but 32,500, not greatly exceeding its 30,653 species of Lepidoptera, with 275,920 specimens. Next follow its 17,638 named species (493,757 specimens) of Hymenoptera, and its 10,253 named species (210,880 specimens) of Diptera.

Annual Meetings at Toronto, Canada.

The Entomological Society of America will meet Tuesday and Wednesday, December 27 and 28; The American Association of Economic Entomologists on Thursday to Saturday, December 29 to 31; The Ecological Society of America, December 27 to 30; the American Society of Zoologists, December 28 to 30; the American Society of Naturalists, December 29; all in affiliation with The American Association for the Advancement of Science.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE

Flower Visits of Xylota chalybea Wd. (Diptera, Syrphidae).

In the "Handbook of Flower Pollination," *1*: 375, citation 40, Davis states, evidently on authority of Graenicher, that some Syrphids do not visit flowers, and mentions *Xylota chalybea* as an example. In Knuth's "Handbuch der Blütenbiologie," III, *2*: 390, of which Davis' work is a translation, this fly is mentioned as a visitor of *Hydrophyllum appendiculatum* and *Viburnum pubescens*. I have also taken it on flowers of *Rosa humilis* and *R. setigera*.—CHARLES ROBERTSON, Carlinville, Illinois.

On the Deposition of Type Material.

In the editorial on the deposition of type material by J. A. G. R. in the June, 1921, number of ENTOMOLOGICAL NEWS, certain features, criticising one of the suggestions in the last report of the Committees on the U. S. National Museum of the two national entomological societies, calls for a statement, especially since certain statements are overdrawn and might convey an incorrect impression.

Our committees were appointed to assist in developing the U. S. National Museum as a truly National Institution for the advancement of entomology in general and to this end should have the unhampered support of the entire entomological fraternity. The National Museum is the museum which should and does logically represent the United States and, in co-operation with the federal Bureau of Entomology, undertakes to identify insects, both native and exotic, for all the people of the United States. Aside from this service which is not attempted by any other similar institution, the National Museum, because of its location and associations, has a larger staff of workers, collaborators, and visiting students than is likely to be assembled by an endowed institution. The scope of the work of the Museum is national and the committees have maintained that the entomologists of the United States should consider it as such and insist on making it such by depositing types and cotypes there rather than in private and small institutional collections. It was not expected, nor intended, by the committee that a few of the larger institutions be deprived of types but it is of the opinion that the type depositories should be reduced to as few as possible. It was believed that private collections and the majority of state institutions are not the best places to deposit types and that the types in these collections, particularly in the state institutions which have been so bountifully helped by the National Museum, should be deposited in the National Museum for safe keeping.

The plan proposed by the National Museum of building up collections as outlined in the committee report under discussion is in itself a valuable feature which we believe no other institution has adopted.

The point to be brought out is that the type material should not be considered as personal property for, in reality, types are the property of the Science and not of the institution or individual in whose custody they may happen to be. Types are the evidence and basis of all systematic work and should be made as readily accessible to all responsible workers as is consistent with a safe policy for their preservation. Type depositories should be limited to a few of the larger institutions, and since the National Museum is the institution of all the people, is broader in its scope than any other institution and is in a better position to aid far-away students by furnishing comparisons made by specialists, it is the one institution which stands out pre-eminent as a type depository. Furthermore, it is the institution which, with the co-operation of the Federal Bureau of Entomology, renders most aid to State institutions and these, therefore, should be willing to assist by depositing their types with the institution to which they frequently appeal for assistance. But that this should not interfere with the deposition of types in other institutions is manifest; however, other type depositories should be few in number and should include only those institutions which are now custodians of large numbers of types and those whose policy for type preservation is permanent and not subject to the whims of a changing administration.

It has at no time been our intention to minimize the importance and value of the various museums in our country. The committee was appointed to assist the National Museum in every way because this museum above all others has been of great practical value to entomologists throughout the whole United States, because service of inestimable intrinsic worth has been and is being rendered the great mass of economic entomologists in America. Special stress has been given the value of the Division of Insects of the U. S. National Museum because it is a museum of all the people, it is broader in scope and is richer in type material than any other American museum; it is bound to have a much larger staff of workers than will probably ever be employed by any endowed institution, and it has agreed to assist in building up the collections of any institution which makes the museum its type depository.

As the editorial in question brought out, it is "virtually impossible" to get Congress to set aside a permanent appropriation for the Museum, yet this does not remove the guarantee, for it certainly is a recognized fact that no government department or independent establishment as firmly developed as the National Museum will ever be completely abolished or cut off. On the other hand, we have heard of endowed institutions going under because of faulty investments, and of their work being curtailed because the endowment, while sufficient at the time established, was not elastic and did not provide for the increased

cost of maintenance which always confronts large institutions. Is not the difference in securing funds for a government institution merely a difference in the method? And, in the government institution is there not the additional guarantee that the Museum will be maintained because of the economic necessity of having insects identified?

—JOHN J. DAVIS.

Mulford Biological Exploration of the Amazon Basin

The latest message received from Dr. Rusby, the Director of the Mulford Exploration, was dated August 30th and was written from Huachi on the Bopi River in Bolivia. Dr. Rusby arrived at Huachi on August 23rd and he and his party spent some time making collections and excursions into surrounding territory. During their stay there four members of the party made a trip up the Cochabamba River and reported finding many things of great scientific and economic interest

Dr. Rusby states that the journey from Espia, at the head of navigation on the Bopi River, down to Huachi was very interesting and accomplished successfully except for the loss of five boxes of provisions, including most of their precious ammunition. The loss of their ammunition leaves the party in a rather precarious condition as they were depending on it for obtaining not only museum specimens of rare birds and small mammals but also to supply the camp with fresh meat. They will also doubtless have need for this ammunition when they pass through certain sections inhabited by more or less hostile Indian tribes.

Photographs were made of what Dr. Rusby considers the largest true cactus in the world, which rises to the height of a good-sized tree and with a limb-spread of 40 feet or more.

Many very interesting forms of insect life have been collected. With these, as in the case of plant life, specimens collected in one of these deep Andean valleys may differ entirely from those of a similar valley very closely adjacent.

The swiftness of the Andean mountain streams and of the Bopi river, on which the party lost some of their boxes of supplies, is indicated by the fact that very few species of fish are encountered there.

The waters of these rivers are also charged with dissolved mineral matter and suspended particles washed down from the mountains. It is therefore practically unfit for drinking purposes until the suspended particles have settled out and the water sterilized. Dr. Rusby reports purchasing whole mule-loads of oranges wherever possible, in order to obtain orange-juice for drinking purposes, so as to avoid using the water of the streams.

The members of the party were all reported to be in good health and enjoying their hard work and novel experiences. According to the plans outlined in letters just received the party expected to arrive at Rurrenabaque, Bolivia, about October 1st.

—R. H. HUTCHISON, *Sec'y.*, Philadelphia.

Entomological Literature

COMPILED BY E. T. CRESSON, JR., AND J. A. G. REHN.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded.

The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published.

All continued papers, with few exceptions, are recorded only at their first installments.

The records of papers containing new genera or species occurring north of Mexico are all grouped at the end of each Order of which they treat.

For records of Economic Literature, see the Experiment Station Record. Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

The titles occurring in the Entomological News are not listed.

1—Proceedings of the Academy of Natural Sciences of Philadelphia. **4**—Canadian Entomologist, London, Canada. **7**—Annals of the Entomological Society of America, Columbus, Ohio. **10**—Proceedings of the Entomological Society of Washington, D. C. **11**—Annals and Magazine of Natural History, London. **13**—Journal of Entomology and Zoology, Claremont, Cal. **15**—Insecutor Inscitiae Menstruus, Washington, D. C. **20**—Bulletin de la Societe Entomologique de France, Paris. **50**—Proceedings of the United States National Museum. **56**—Proceedings of the Indiana Academy of Sciences, Indianapolis. **59**—Journal of Agricultural Research, Washington, D. C. **61**—Proceedings of the California Academy of Sciences, San Francisco. **79**—Bulletin of the Museum of Comparative Zoology at Harvard College, Cambridge, Mass. **89**—Zoologische Jahrbucher, Jena. **108**—Journal of Genetics, Cambridge, England. **109**—Annales Historico-Naturales Musei Nationalis Hungarici, Budapest. **110**—Naturwissenschaftliche Wochenschrift, Jena. **111**—Archiv für Naturgeschichte, Berlin. **115**—Societas Entomologica, Stuttgart. **119**—Proceedings of the National Academy of Sciences of the U. S. A., Washington, D. C. **127**—Archiv fur Entwicklungsmechanik der Organismen, Berlin.

GENERAL. Aldrich, J. M.—The division of insects in the U. S. National Museum. (Rep. Smiths. Inst., 1919, 367-80.) **Barber, G. W.**—Collecting about Walden Pond, Concord, Mass. **4**, liii, 145-6. **Gorham, R. P.**—A method of making photographic prints of insect wings. **4**, liii, 161-62. **Gotz, W.**—Zur bionomie der insekten. IV. Vom geruchsinn der bienen. **115**, xxxix, 37-9. **Howard, L. O.**—Entomology and the war. (Rep. Smiths. Inst., 1919, 411-19.) **McColloch, J. W.**—A method for studying the hessian fly and other insects. **7**, xiv, 227-30. **Weiss, West & Felt**—Notes on the insects of the spreading dogbane, with a description of a new dogbane midge. **4**, liii, 146-52.

ANATOMY, PHYSIOLOGY, ETC. **Armbruster, L.**—Zur phylogenie der geschlechtsbestimmungsweise bei bienen. **89,** xl, Abt. f. Syst., 323-88. **Brecher, L.**—Die puppenfaerbungen des kohlweisslings, Pieris brassicae. **127,** xlv, 273-322. **Buddenbrock, W. v.**—Die vermutliche losung der halterenfrage. (Pflugers Archiv f. Physiol., clxxv, 125-64.) **Dette, E.**—Ueber die metamorphose von Trichosticha flavescens. **89,** xxxix, Abt. f. Syst., 417-42. **Dolley, W. L.**—The relative stimulating efficiency of continuous and intermittent light in Vanessa antiopa. (Psychobiology, ii, 137-176.) **Ewing, H. E.**—Selection, regression and parent progeny correlation in Aphis avenae. (Trans. Illinois Ac. Sc., x, 303-22, 1917.) **Hass, W.**—Ueber die struckture des chitins bei arthropoden. (Arcv. Anat. u. Phys., Leipzig, 1916, 295-338.) **Heikertinger, F.**—Tauschende ahnlichkeit mit wespen und bienen (Sphekoide). **110,** xx, 589-92. **Hess, W. N.**—Notes on the biology of the fireflies. **56,** 1919, 229-31. **Hyde, R. R.**—Segregation and recombination of the genes for tinged, blood, buff, and coral, in Drosophila melanogaster. **56,** 1920, 291-313. **Kielich, J.**—Beitrage zur kenntnis der insectenmuskeln. **89,** xl, Abt. f. Anat., 516-36. **Kremer, J.**—Beitrage zur histologie der coleopteren . . . **89,** xl, Abt. f. Anat., 105-54. **Metcalf, C. L.**—The genitalia of male Syrphidae: Their morphology, with especial reference to its taxonomic significance. **7,** xiv, 169-226. **Minnich, D. E.**—The relation of phototropism to swarming in the honey bee. (Psychobiology, ii, 175, 177-80.) **Muttkowski, R. A.**—Copper: its occurrence and role in insects and other animals. (Trans. Am. Micros. Soc., xl, 144-57.) **Onslow, H.**—The inheritance of wing color in lepidoptera. **108,** xi, 123-39. **Przibram, H.**—Fangbeine als regenerate. Fussglieder an kaeferfuhlern. Regeration beim hautflugler Cimbex axillaris. **127,** xlv, 39-51; 52-68; 69-82.

MEDICAL. **Riley, W. A.**—Some little emphasized guide-posts to medical entomology. **7,** xiv, 159-68.

ARACHNIDA, ETC. **Herrera, M.**—Los escorpiones de Mexico. (Mem. Soc. Sc. "Antonio Alzate," xxx, 137-59.) **Myers, Cox, Jahraus & Moore**—A list of California Arachnida. **13,** xiii, 19-37.

Chamberlain, J. C.—Notes on the genus Garypus in N. A. **4,** liii, 186-91. **Ewing, H. E.**—New nearctic spider mites of the family Tetranychidae. **50,** lix, 659-66.

NEUROPTERA. **Dietz, H. F.**—Notes on the termites of Indiana. **56,** 1920, 87-96. **Garman, P.**—Variation in the gills of Zygoptera. (Trans. Illinois Ac. Sc., ix, 235, 1916.) **Kennedy, C. H.**—Some interesting dragon-fly naiads from Texas. **50,** lix, 595-98. **Kohl, E. J.**—Mallophaga of our native birds. **56,** 1920, 119-33. **Krausse, A.**—Zur systematik um und naturgeschichte der Psylliden und speziell von Psyllopsis fraxini. (Centralb. Balt. Parasitenk. u.

Infektionsk., xlvi, 80-96.) **Longinos, N., R. P.**—Dos nuevas tribus de mirmeleonidos. (Mem. R. Ac. Cien. y Artes, Barcelona, xvi, 379-84.) **Williamson, E. B.**—Notes on Indiana dragonflies. **56,** 1920, 99-104. **Zacher, F.**—Die literatur ueber die blattflohe . . . und nachtragen zum "Psyllidarum catalogus." (Centralb. Bakter. Parasitenk. u. Infekt., xlvi, 97-111.)

ORTHOPTERA. Blatchley, W. S.—The Orthoptera of northwestern America. **56,** 1919, 233-38. **Uvarov, B. P.**—Records and descriptions of South American grasshoppers of the groups Arcypterae and Scyllinae. **11,** viii, 369-92.

HEMIPTERA. Bishopp, F. C.—Solenopotes capillatus, a sucking louse of cattle not heretofore known in the U. S. **59,** xxi, 797-801. **Cockerell & Sandhouse**—Some eocene insects of the family Fulgoridae. **50,** lix, 455-57. **Snodgrass, R. E.**—The seventeen-year locust. (Rep. Smiths. Inst., 1919, 381-409.)

LEPIDOPTERA. Blackmore, E. H.—Cosymbia lumenaria, a correction. **4,** liii, 168. **Braun, A. F.**—Two weeks collecting in Glacier national park. **1,** 1921, 1-23. **von Dalla Torre, K. W.**—Lepidopterorum catalogus. Pars 25: Cymatophoridae. **Seitz, A.**—Die Grosschmetterlinge der erde. Faun. Am., 337-44.

Dyar, H. G.—New American L. and records. **15,** ix, 137-45. **McDunnough, J.**—Two new Canadian crambid moths. Note on the generic position of two Canadian arctiids with description of new species. The Canadian species of the genus Anomogyna. Samia euryalus, the correct name for the California silk worm moth. **4,** liii, 160-61; 167-68; 176-81; 191-92.

DIPTERA. Alexander, C. P.—New or little known crane flies from the Amazonian region. **1,** 1921, 39-103. Undescribed eriopterine crane-flies from Argentina. **4,** liii, 162-66. **Alexander & Malloch**—Notes on the life-history of a crane-fly of the genus Geranomyia. (Trans. Illinois Ac. Sc., xiii, 310-19.) **Kieffer, K.**—Beitrag zur kenntnis der Platygasterinae und ihrer lebensweise. (Centralb. Bakter. Paras. u. Infekt., xlvi, 547-92.) **King, J. L.**—The egg laying habits of a parasitic dipteron, Pterodontia. (Trans. Illinois Ac. Sci., ix, 233-4, 1916.) **Malloch, J. R.**—Exotic Muscaridae.—IV. **11,** viii, 414-25. Economic importance of D. (Trans. Illinois Ac. Sci., ix, 230-32, 1916.) **Townsend, C. H. T.**—Some new muscoid genera, ancient and recent. **15,** ix, 132-34.

Alexander, C. P.—A new species of Tipula injurious to pasture lands. **15,** ix, 135-37. Undescribed Tipulidae from western N. A. **61,** xi, 103-7. **Curran, C. H.**—A revision of Syrphus species belonging to the ribesii group. New species of Syrphidae. **4,** liii,

152-60; 171-76. **Dyar, H. G.**—The genus Haemagogus (Culicidae). Illustrations of certain mosquitoes. The mosquitoes of Argentina. **15,** ix, 101-14; 114-18; 148-50. **Felt, E. P.**—(See under Weiss, West & Felt.) **Garrett, C. B. D.**—Notes on Helomyzidae and descriptions of new species. **15,** ix, 119-32. **Kieffer, J. J.**—Chironomides d'Amerique. . . **109,** xv (1917), 292-364.

COLEOPTERA. Benderitter, E.—Un Rutelide nouveau du Perou. **20,** 1921, 187-8. **Bruch, C.**—Algunos interesantes cerambicidos. (Rev. Mus. La Plata, xxv, 345-56.) **Lucas, R.**—Bericht u. die wissenschaftlichen leistungen im gebiete der entomologie. Coleoptera f. 1915. **111,** 1916, B, heft 5, 317 pp. **Mann, W. M.**—Three new myrmecophilous beetles. **50,** lix, 547-52.

Fenyes, A.—New genera and species of Aleocharinae with a polytomic synopsis of the tribe. **79,** lxv, 17-36. **Liljeblad, E.**—Notes on the Mordellidae of the U. S., with descriptions of new species. **4,** liii, 181-86.

HYMENOPTERA. Cushman & Gahan—The Thomas Say species of Ichneumonidae. **10,** xxiii, 153-71.

Crawford, J. C.—A new species of the chalcidid genus Zatropis. **10,** xxiii, 171-2.

AN ABSTRACT OF THE LEGISLATION IN FORCE IN THE BRITISH EMPIRE DEALING WITH PLANT PESTS AND DISEASES up to the year 1920. Compiled by E. MARGUERITE RALFS, B. A., London. The Imperial Bureau of Entomology, 41 Queen's Gate, S. W. 7, 1921.—The contents of this pamphlet of 65 octavo pages are well set forth in the title, especially when one learns from page 3 that in this outline the word "pest" or "disease" includes parasitic insects, fungi or plants. The orders, proclamations and acts of the various parts of the Empire bearing on the presence of diseased plants and on the importation of plants and their possible pests are summarized for England and Wales ("it is understood that similar Orders will be issued by the Scottish and Irish Boards"), Australian Commonwealth and its several States, Canada and its provinces, Newfoundland, Ceylon, Cyprus, Egypt, Federated Malay States, Fiji, Gilbert and Ellice Islands, Gold Coast, India, Malta, Mauritius, New Zealand, Southern Nigeria, Nigeria, Nyasaland, Papua, Southern Rhodesia, Northern Rhodesia, Samoa, Seychelles, Sierra Leone, South Africa, Straits Settlements, Sudan, Tonga, Uganda, Antigua, Bahama Islands, Barbados, Bermuda, British Guiana, British Honduras, Grenada, Jamaica, Montserrat, St. Kitts-Nevis, St. Lucia, St. Vincent, Trinidad and Tobago and Zanzibar, truly a formidable list. Some of the ordinances are very drastic, as in the case of British Honduras: "Any plant imported is deemed to have come from a prohibited country unless the importer satisfactorily proves otherwise." We hope that where the B.-Hondurans dwell neither moth nor rust corrupt under the protecting shield of Ordinance No. 3 of 1912. This Abstract is provided with an index of nine pages. (*Advertisement*). —P. P. CALVERT.

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EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued.

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